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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,775	04/14/2004	Uwe Mikan	081468-0309171	4698
909 7590 01/25/2008 PILLSBURY WINTHROP SHAW PITTMAN, LLP P.O. BOX 10500 MCLEAN, VA 22102			EXAMINER KIM, PETER B	
			ART UNIT 2851	PAPER NUMBER
			MAIL DATE 01/25/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary

Application No.

10/823,775

Applicant(s)

MICKAN ET AL.

Examiner

Peter B. Kim

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,8,12-17,19-21 and 23-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,12-17,19-21 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 6, 8, 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed on Oct. 26, 2007 have been fully considered.

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

The new grounds of rejection are based on broader interpretations of the claims. Regarding claims 1, 14 and 24, it is not claimed that the electric field is applied during the exposure of the resist. The language of the claims specify the direction of the field as being perpendicular to the plane of the resist layer during the exposing of the resist, but not necessarily that the application of the field and the exposure occur concurrently as in claims 15 and 16. Further, the claims are not construed as requiring the steps to be performed in the recited order. Regarding claim 15, incorporating of the conductive material by the resist material is interpreted broadly as including depositing the conductive material on the upper surface of the resist, unlike claim 16 which explicitly claim a "conductive resist material".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 15, 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Bristol et al. (Bristol) (2005/0074706).

Bristol discloses a method of fabricating a device using a lithographic process and a lithographic apparatus (para 0002) comprising an illumination system to condition a projection beam of extreme ultraviolet radiation (para 0002, 0014, 0023, Fig. 5), a support structure to support a patterning device (inherent to para 0002), a substrate table (inherent to para 0002) to hold a substrate (Fig.5) having a resist layer (10), a projection system (inherent to para 0002), and an electric field generator (16) to apply a fixed potential (para 0024) where the upper surface is at a positive potential (Fig. 5) between a layer of conductive material (para 0025) on the upper surface (14) of the resist layer (10), which incorporates the conductive material (14, para 0025) the direction of the field being substantially perpendicular to a plane of the resist layer during the exposing (Fig. 1, E).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 5, 12-14, 17, 19, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al. (Cheng) (2003/0008246) in view of Lei (2004/0134420)

Cheng discloses a method of fabricating a device using a lithographic process and a lithographic apparatus (para 0001) comprising applying a first layer of metallic conductive layer (Fig. 2, Al sheet) to an upper surface of a resist layer on a substrate (Fig. 2, wafer, para 0058) a

second layer of conducting layer under the substrate (Fig. 2), exposing a part of the resist layer to extreme ultraviolet radiation (para 0077, 0078), applying an electric field across the resist layer by applying a potential difference between conducting layers wherein the upper surface is at a positive potential with respect to a lower surface, the direction being substantially perpendicular to a plane of the resist layer during the exposing (para 0056-0059). Although Cheng does not disclose that the conductive material has a thickness less than 50 nm, it would have been obvious to one of ordinary skill in the art to provide appropriate thickness of the conductive layer since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). However, Cheng does not disclose that the second conductive layer is between the resist and the substrate. Lei discloses a substrate in photolithographic processing (para 0001) having a conductive layer (51) located between the photoresist (64) and the substrate (50) (para 0030). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the substrate of Lei for a post exposure baking process of Cheng in order to enhance resist sensitivity and resolution as taught by Cheng in the abstract.

Claims 16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bristol et al. (Bristol) in view of Singh et al. (Singh) (6,319,643).

Bristol discloses a method of fabricating a device using a lithographic process and a lithographic apparatus (para 0002) comprising an illumination system to condition a projection beam of extreme ultraviolet radiation (para 0002, 0014, 0023, Fig. 5), a support structure to support a patterning device (inherent to para 0002), a substrate table (inherent to para 0002) to

hold a substrate (Fig.5) having a resist layer (10), a projection system (inherent to para 0002), and an electric field generator (16) to apply a fixed potential (para 0024) where the upper surface is at a positive potential (Fig. 5) between a layer of conductive material (para 0025) on the upper surface (14) of the resist layer (10), which incorporates the conductive material (14, para 0025) the direction of the field being substantially perpendicular to a plane of the resist layer during the exposing (Fig. 1, E). However, Bristol does not disclose that the resist material is conductive. Singh discloses a conductive photoresist exposed to EUV (col. 4, line 49 - col. 5, line 51). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the conductive resist to the invention of Bristol since it would simplify the method by providing a conductive resist instead of a conductive layer and a resist layer.

Allowable Subject Matter

Claims 6, 8 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 6 and 27, none of the prior art of record teaches or discloses a method of fabricating a device using a lithographic process comprising the layer of conductive material which overlaps a side or base of the device in combination with the limitations of claim 1 or 24.

Conclusion

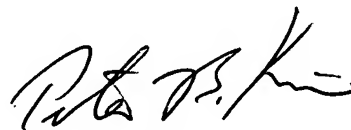
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tokui et al. (5,258,266) and Kosuge (JP 10106930) is included to show the state of the art regarding a conductive material in direct contact with the resist and a conductive resist,

respectively. However, Tokui does not disclose that the electrode is metallic, and Kosuge does not disclose that electric field is applied during exposure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Peter B. Kim
Primary Examiner
Art Unit 2851

January 10, 2008